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LAMPIRAN

Lampiran 1. *Script* program sensor ultrasonik JSN-SR04T

```
// Define Trig and Echo pin:
#define trigPin 3
#define echoPin 4

// Define variables:
long duration;
int distance;

void setup() {
  // Define inputs and outputs
  pinMode(trigPin, OUTPUT);
  pinMode(echoPin, INPUT);

  // Begin Serial communication at a baudrate of 9600:
  Serial.begin(9600);
}

void loop() {
  // Clear the trigPin by setting it LOW:
  digitalWrite(trigPin, LOW);

  delayMicroseconds(50);

  // Trigger the sensor by setting the trigPin high for
  10 microseconds:
  digitalWrite(trigPin, HIGH);
  delayMicroseconds(1);
  digitalWrite(trigPin, LOW);

  // Read the echoPin. pulseIn() returns the duration
  (length of the pulse) in microseconds:
  duration = pulseIn(echoPin, HIGH);

  // Calculate the distance:
  distance = duration*0.034/2;

  // Print the distance on the Serial Monitor
  (Ctrl+Shift+M):
  Serial.println(distance);
  delay(1000);
}
```

Lampiran 2. Script program sensor curah hujan *tipping bucket*

```

#include "RTCLib.h"
#define RainPin 2
bool bucketPositionA = false;
const double bucketAmount = 0.0427; // Hasil
Perhitungan & Kalibrasi nilai per tip sensor

double dailyRain = 0.0;
double hourlyRain = 0.0;
double dailyRain_till_LastHour = 0.0;
bool first;
int delayData = 0;

RTC_Millis rtc;

unsigned long previousMillis = 0;
const long interval = 100; //ganti 500ms sesuai
interval kebutuhan anda dalam menampilkan data per tip
di serial monitor

void setup () {
  Serial.begin(9600);
  pinMode(RainPin, INPUT);
  rtc.begin(DateTime(__DATE__, __TIME__));
}

void loop() {
  unsigned long currentMillis = millis();
  DateTime now = rtc.now();
  if ((bucketPositionA == false) &&
(digitalRead(RainPin) == LOW)) {
    bucketPositionA = true;
    dailyRain += bucketAmount;
  }
  if ((bucketPositionA == true) &&
(digitalRead(RainPin) == HIGH)) {
    bucketPositionA = false;
  }
  if (now.minute() != 0) first = true;

  if (now.minute() == 0 && first == true) {

    hourlyRain = dailyRain - dailyRain_till_LastHour;
    dailyRain_till_LastHour = dailyRain;
  }
}

```

```

        // Menampilkan data per jam dan perhari di serial
monitor
        Serial.println("===== DATA CURAH HUJAN PER-
JAM =====");
        Serial.print(now.hour());
        Serial.print(":");
        Serial.print(now.minute());
        Serial.print(": Total Rain for the day = ");
        Serial.print(dailyRain, 3);
        Serial.print(" inches atau ");
        Serial.print(dailyRain * 2.54 * 10, 3);
        Serial.println(" mm");
        Serial.println();
        Serial.print("      : Rain in last hour = ");
        Serial.print(hourlyRain, 3);
        Serial.print(" inches atau ");
        Serial.print(hourlyRain * 2.54 * 10, 3);
        Serial.println(" mm");
        Serial.println();
        first = false;
    }
    if (now.hour() == 0) {
        dailyRain = 0.0;
        dailyRain_till_LastHour = 0.0; // Jika jam pada RTC
pukul 00:00 nilai pembacaan sensor menjadi 0 kembali
    }

/*
 * menampilkan nilai per tip curah hujan
 * menggunakan Millis agar menghindari delay
 * untuk pembacaan sensor
 */
if (currentMillis - previousMillis >= interval) {
    previousMillis = currentMillis;
    Serial.print("mm/tip=");
    Serial.print(dailyRain * 2.54 * 10, 3);
    Serial.println(" mm");
    Serial.print("inch/tip=");
    Serial.print(dailyRain, 3);
    Serial.println(" inch");
    delay (1000);
}
}

```



Lampiran 3. Tabel data kalibrasi sensor ultrasonik

Meteran (cm)	Sensor (cm)	Selisih (cm)	Error (%)
20	20	0	0
21	21	0	0
22	22	0	0
23	23	0	0
24	24	0	0
25	25	0	0
26	26	0	0
27	27	0	0
28	28	0	0
29	29	0	0
30	30	0	0
31	31	0	0
32	32	0	0
33	34	1	3,03030303
34	34	0	0
35	35	0	0
36	36	0	0
37	37	0	0
38	39	1	2,631578947
39	39	0	0
40	40	0	0
41	41	0	0
42	42	0	0
43	43	0	0
44	44	0	0
45	45	0	0
46	46	0	0
47	47	0	0
48	48	0	0
49	49	0	0
50	50	0	0
51	51	0	0
52	52	0	0
53	53	0	0
54	54	0	0
55	55	0	0
56	56	0	0
57	57	0	0
58	57	1	1,724137931
59	58	1	1,694915254
60	59	1	1,666666667

61	60	1	1,639344262
62	61	1	1,612903226
63	62	1	1,587301587
64	63	1	1,5625
65	64	1	1,538461538
66	65	1	1,515151515
67	66	1	1,492537313
68	67	1	1,470588235
69	68	1	1,449275362
70	69	1	1,428571429
71	70	1	1,408450704
72	71	1	1,388888889
73	72	1	1,369863014
74	73	1	1,351351351
75	74	1	1,333333333
76	74	2	2,631578947
77	75	2	2,597402597
78	76	2	2,564102564
79	77	2	2,53164557
80	78	2	2,5
81	79	2	2,469135802
82	80	2	2,43902439
83	81	2	2,409638554
84	82	2	2,380952381
85	83	2	2,352941176
86	84	2	2,325581395
87	85	2	2,298850575
88	86	2	2,272727273
89	87	2	2,247191011
90	88	2	2,222222222
91	89	2	2,197802198
92	89	3	3,260869565
93	91	2	2,150537634
94	92	2	2,127659574
95	92	3	3,157894737
96	93	3	3,125
97	94	3	3,092783505
98	95	3	3,06122449
99	96	3	3,03030303
100	97	3	3
101	98	3	2,97029703

102	98	4	3,921568627
103	99	4	3,883495146
104	100	4	3,846153846
105	102	3	2,857142857
106	103	3	2,830188679
107	104	3	2,803738318
108	105	3	2,777777778
109	106	3	2,752293578
110	107	3	2,727272727
111	108	3	2,702702703
112	109	3	2,678571429
113	110	3	2,654867257
114	111	3	2,631578947
115	112	3	2,608695652
116	113	3	2,586206897
117	114	3	2,564102564
118	115	3	2,542372881
119	116	3	2,521008403
120	117	3	2,5

Lampiran 4. Sertifikat kalibrasi sensor curah hujan



No. Sertifikat : LC-RR / 131 / KBB4 / VII / 2021
No. Order : 131
Lembar ke : 2 dari 2 halaman
Page No. : 2 of 2 pages

Nama Alat / Instrument Name	: Tipping Bucket
Pabrikan / Manufacturer	: -
Tipe / Nomor Seri / Type / Serial Number	: - / -
Diameter Corong / Funnel Diameter	: 3,607 cm
Luas Corong / Funnel Wide	: 19,2 cm ²
Kapasitas / Range	: 0 ~ ... mm
Graduasi / Graduating	: 1,085 mm
Tanggal Terima / Date of Acceptance	: 06 Juli 2021
Tanggal Kalibrasi / Calibration Date	: 06 Juli 2021
Tempat Kalibrasi / Calibration Place	: Laboratorium Kalibrasi BBMKG Wilayah IV Makassar

Kondisi Ruang / Environment
Suhu Ruang / Room Temperature : (32,25 U_{95} 0,57) °C
Kelembapan / Relative Humidity : (67,8 U_{95} 3,6) %RH

HASIL KALIBRASI / CALIBRATION RESULT

Peralatan Standar	Alat Yang Dikalibrasi	Koreksi	U ₉₅
mm	mm	mm	mm
103,1	103,1	0,05	0,80

Catatan / Notes

Sertifikat ini hanya berlaku untuk peralatan dengan identitas yang dinyatakan di atas
This Certificate only applies to equipment with the identity stated above

Standar Kalibrasi / Calibration Standard : Gelas Ukur, ISOLAB
 Digital Caliper, Sylvac, S_Cal Evo Basic, SN. HM300370

Tertelusur Ke SI melalui / Traceable to SI through : LK-032-IDN
 LK-014-IDN

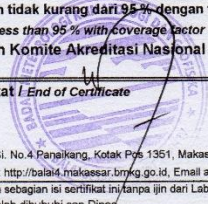
Dokumen Acuan / Reference Document : WMO No. 8, 2018 edition

Metode Kalibrasi / Calibration Methode : MK-MET ("Metode Kalibrasi Meteorologi")

Ketidakpastian pengukuran dinyatakan pada tingkat kepercayaan tidak kurang dari 95% dengan faktor cakupan k = 2
Uncertainty of measurement is expressed at a confidence level of no less than 95% with coverage factor k = 2

Ruang lingkup kalibrasi lapang ini belum terakreditasi oleh Komite Akreditasi Nasional (KAN)

Akhir dari Sertifikat / End of Certificate



Jln. Prof. Dr. H. Abdurrahman Basalamah, SE., M.Si. No.4 Pangkajene, Kotak Pos 1351, Makassar 90231
 Telp. (0411) 456493, 437331 ext.436 Fax. (0411) 455019, 449286, Website : <http://balah4.makassar.bmkg.go.id>, Email address : inskal_bmkg4@bmkg.go.id
 Dilarang keras mengutip/memperbanyak dan/atau mempublikasikan sebagian isi sertifikat ini tanpa ijin dari Laboratorium Kalibrasi BMKG
 Sertifikat ini sah bila telah ditubuhi cap Dinas

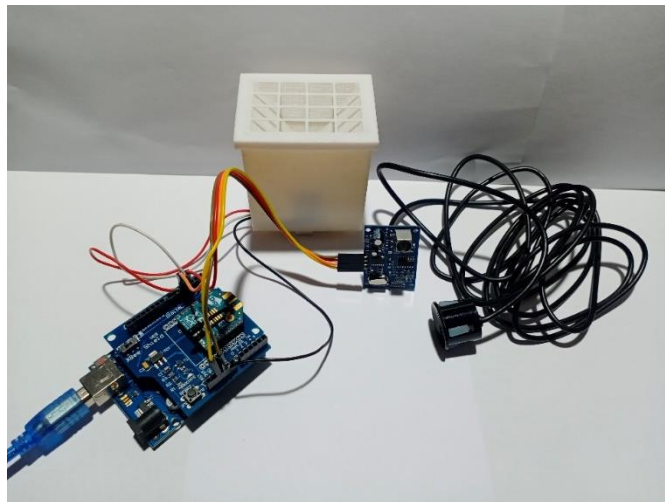
F/IKK.7.8/KBB4/MET/05

Revisi 2

Lampiran 5. Rangkaian perangkat keras.



Rangkaian penerima data (Raspberry pi, Xbee Pro S2C dan Xbee adaptor)



Rangkaian pengirim data (Sensor ultrasonik, sensor curah hujan, Arduino uno, Xbee Pro S2C dan Xbee *shield*)

Lampiran 6. Pengujian sistem *monitoring* skala lapangan



Pengujian sistem *monitoring* di Bendungan Kampili

Lampiran 7. Data pengukuran ketinggian air skala lapangan per 10 menit.

Tanggal	Waktu	Ketinggian air (cm)
13 November 2021	10:31	417,59
	10:41	417,31
	10:51	417,41
	11:01	417,35
	11:11	417,00
	11:21	416,64
	11:31	416,21
	11:41	416,14
	11:51	415,69
	12:01	415,47
	12:11	415,43
	12:21	415,50
	12:31	415,36
	12:41	415,42
	12:51	415,34
	13:01	415,27
	13:11	415,00
	13:21	414,83
	13:31	414,43
	13:41	413,67
	13:51	413,15
	14:01	412,80
	14:11	412,51
	14:21	412,09
	14:31	411,94
	14:41	411,61
	14:51	411,33
	15:01	411,06
	15:11	411,00
	15:21	410,82
15:31	410,82	
15:41	410,67	
15:51	410,19	
16:01	410,02	
16:11	409,96	
16:21	409,90	

14 November 2021	09:31	403,00
	10:31	403,01
	11:31	403,00
	12:31	403,02
	13:31	403,02
	14:31	403,04
	10:31	403,33
	10:41	403,00
	10:51	403,01
	11:01	403,31
	11:11	403,05
	11:21	403,01
	11:31	402,99
	11:41	403,00
	11:51	402,98
	12:01	403,04
	12:11	403,00
	12:21	402,96
	12:31	402,81
	12:41	402,89
	12:51	402,94
	13:01	402,71
	13:11	402,78
	13:21	402,76
	13:31	402,52
	13:41	402,48
	13:51	402,71
	14:01	403,23
	14:11	402,42
	14:21	402,10
	14:31	401,91
	14:41	402,02
14:51	401,81	
15:01	401,59	
15:11	401,49	
15:21	401,10	
15:31	401,11	
15:41	400,64	
15:51	400,42	

	16:01	400,38
	16:11	400,00
	16:21	400,13
15 November 2021	09:31	395,00
	09:41	395,36
	09:51	395,00
	10:01	394,98
	10:11	395,10
	10:21	395,01
	10:31	395,15
	10:41	395,76
	10:51	395,57
	11:01	395,20
	11:11	395,59
	11:21	395,80
	11:31	395,51
	11:41	395,74
	11:51	395,81
	12:01	395,87
	12:11	395,46
	12:21	395,73
	12:31	395,39
	12:41	394,22
	12:51	392,26
	13:01	391,63
	13:11	392,16
	13:21	392,71
	13:31	393,32
	13:41	393,94
	13:51	394,02
	14:01	394,01
	14:11	394,01
	14:21	393,99
	14:31	393,94
	14:41	393,93
	14:51	393,90
15:01	393,99	
15:11	393,92	
15:21	393,81	

	15:31	393,17
	15:41	392,98
	15:51	392,31
	16:01	392,09
	16:11	392,00
	16:21	392,08

Lampiran 8. Data pengukuran curah hujan skala lapangan perjam.

Tanggal	Waktu	Curah hujan (mm)
13 November 2021	10:00	0
	11:00	0
	12:00	0
	13:00	0
	14:00	0
	15:00	0
	16:00	0
	17:00	0
14 November 2021	10:00	0
	11:00	0
	12:00	0
	13:00	0
	14:00	0
	15:00	0
	16:00	0
	17:00	0
15 November 2021	10:00	0
	11:00	0
	12:00	0
	13:00	2,169
	14:00	0
	15:00	0
	16:00	0
	17:00	0

Lampiran 9. Data pengukuran skala lapangan curah hujan perjam daerah Kecamatan Wajo, Kota Makassar.

Tanggal	Waktu	Curah hujan (mm)
24 November 2021	18:00	0
	19:00	1,085
	20:00	1,085
	21:00	0
	22:00	0
	23:00	0
	00:00	0
	01:00	0
	02:00	0
	03:00	0
	04:00	0
	05:00	0
	06:00	0
	07:00	1,085
	08:00	0
	09:00	0
	10:00	0
	11:00	0
	12:00	0
	13:00	0
14:00	0	
15:00	0	
16:00	0	
17:00	0	
18:00	1,085	
26 November 2021	18:00	1,085
	19:00	11,93
	20:00	2,169
	21:00	0
	22:00	0
	23:00	0
	00:00	0
	01:00	0
	02:00	0
	03:00	0
04:00	0	

	05:00	0
	06:00	0
	07:00	0
	08:00	0
	09:00	0
	10:00	0
	11:00	0
	12:00	0
	13:00	0
	14:00	10,846
	15:00	2,169
	16:00	0
	17:00	4,338
	18:00	1,085
30 November 2021	18:00	0
	19:00	2,169
	20:00	0
	21:00	0
	22:00	0
	23:00	0
	00:00	0
	01:00	0
	02:00	0
	03:00	0
	04:00	0
	05:00	0
	06:00	0
	07:00	0
	08:00	0
	09:00	0
	10:00	0
	11:00	0
	12:00	0
	13:00	0
14:00	0	
15:00	0	
16:00	0	
17:00	0	
18:00	2,169	

Lampiran 10. *Script program pengirim data dari Xbee ke webservice.*

```

import serial
import datetime
import time
import mysql.connector

if __name__ == '__main__':
    db = mysql.connector.connect(
        user= 'xxxxxx',
        password= 'xxxxxxxxxxxxxxxxxx',
        db= 'database_TA',
        host= 'localhost',
        port= 3306
    )
    cursor = db.cursor()
    seri1=serial.Serial(port="COM4", timeout=1.5,
baudrate=9600)
    seri2=serial.Serial(port="COM8", timeout=1.5,
baudrate=9600)
    waktu1 = datetime.datetime.now()
    while True:
        a1=str(seri1.readline().strip())
        a2=str(seri2.readline().strip())
        data1 = a1.split("")
        data2 = a2.split("")
        print(data1,data2,a1,a2)
        command = """ INSERT INTO myapp_data_sensor
(ketinggian_air, curah_hujan, tanggal_input)
VALUES (%s,%s,%s) """
        value =
tuple((str(data2[1]),str(data1[1]),str(waktu1)))
        cursor.execute(command,value)

```

Lampiran 11. *Script* program “admin.py” pada aplikasi *webservice*.

```
from django.contrib import admin
from TA_app import models

# Register your models here 2.
admin.site.register(models.data_sensor)
admin.site.register(models.data_permit)
admin.site.register(models.data_perjam)
admin.site.register(models.data_perhari)
admin.site.register(models.daftar_sensor)
```

Lampiran 12. *Script program “models.py” pada aplikasi webserver.*

```

from django.db import models

class data_sensor(models.Model):
    ketinggian_air = models.CharField(max_length=10)
    curah_hujan = models.CharField(max_length=10)
    tanggal_input =
models.DateTimeField(auto_now_add=True)

    def __str__(self):
        return str(self.tanggal_input)

class data_permenit (models.Model):
    ketinggian_air = models.CharField(max_length=10)
    Curah_hujan = models.CharField(max_length=10)
    tanggal_input =
models.DateTimeField(auto_now_add= True)

    def __str__(self):
        return str(self.tanggal_input)

class data_perjam (models.Model):
    ketinggian_air = models.CharField(max_length=10)
    curah_hujan = models.CharField(max_length=10)
    tanggal_input =
models.DateTimeField(auto_now_add= True)

    def __str__(self):
        return str(sel.tanggal_input)

class data_perhari (models.Model):
    ketinggian_air = models.CharField(max_length=10)
    curah_hujan = models.CharField(max_length=10)
    tanggal_input =
models.DateTimeField(auto_now_add= True)

    def __str__(self):
        return str(self.tanggal.input)

class daftar_sensor (models.Model):
    nama_sensor = models.CharField(max_length=50)
    deskripsi = models.CharField(max_length=512)
    model_sensor = models.CharField(max_length=50)

    def __str__(self):
        return str(self.nama_sensor)

```


Lampiran 13. *Script program “urls.py” pada aplikasi webserver.*

```
from django.urls import path
from TA_app import views

app_name = 'TA_app'

urlpatterns = [
    path('', views.Dashboard, name='Dashboard'),
    path('home', views.Dashboard, name='Dashboard'),
    path('home/stream', views.stream, name='stream'),
    path('jenis_sensor/', views.jenis_sensor,
name='Jenis Sensor'),
    path('grafik_data/', views.grafik_data,
name='Grafik Data'),
    path('tabel_data/', views.tabel_data, name='Tabel
Data'),
]
```

Lampiran 14. *Script program “views.py” pada aplikasi webserver.*

```

from django.shortcuts import render
from django.http import StreamingHttpResponse
from TA_app.models import *
from TA_app import *
from django.core.paginator import Paginator, EmptyPage,
PageNotAnInteger
import time
import datetime
import mysql.connector

# Create your views here.

def Dashboard(request):
    return render(request, 'Dashboard.html')

def stream(request):
    def event_stream():
        db = mysql.connector.connect(user =
'evitardhiya',password = 'ReaSnflwr23earfx!',database =
'database_TA',host = '103.247.10.207',port = 3306)
        cursor = db.cursor()
        while True:
            dat = data_sensor.objects.latest('id')
            data = [dat.ketinggian_air,
dat.curah_hujan,dat.tanggal_input]
            kirim = ''
            for i in data:
                kirim += str(i) + ","
            time.sleep(1)
            yield 'data: %s\n\n' %kirim
    return StreamingHttpResponse(event_stream(),
content_type='text/event-stream')

def jenis_sensor(request):
    return render(request, 'jenis_sensor.html')

def grafik_data(request):
    tanggal_awal = request.GET.get('awal')
    tanggal_akhir = request.GET.get('akhir')
    data =
models.data_perjam.objects.filter(tanggal_input__range=
[tanggal_awal,tanggal_akhir])
    tanggal = []
    hujan = []
    air = []

```

```
    for i in data:
        tanggal.append(i.tanggal_input)
        hujan.append(i.curah_hujan)
        air.append(i.ketinggian_air)
    return render(request,
'grafik_data.html',{'tanggal':tanggal,'hujan':hujan,'ai
r':air})

def tabel_data(request):
    tanggal_awal = request.GET.get('awal')
    tanggal_akhir = request.GET.get('akhir')
    data =
models.data_perjam.objects.filter(tanggal_input__range=
[tanggal_awal,tanggal_akhir])
    return render(request,
'tabel_data.html',{'datas':data})
```

Lampiran 15. *Script program “settings.py” pada Django-Framework.*

```

"""
Django settings for tugas_akhir project.

Generated by 'django-admin startproject' using Django
3.2.5.

For more information on this file, see
https://docs.djangoproject.com/en/3.2/topics/settings/

For the full list of settings and their values, see
https://docs.djangoproject.com/en/3.2/ref/settings/
"""

from pathlib import Path
import os

# Build paths inside the project like this: BASE_DIR /
'subdir'.
BASE_DIR= Path(__file__).resolve().parent.parent
TEMPLATE_DIR= os.path.join(BASE_DIR, "template")
STATIC_DIR= os.path.join(BASE_DIR, "static")

# Quick-start development settings - unsuitable for
production
# See
https://docs.djangoproject.com/en/3.2/howto/deployment/
checklist/

# SECURITY WARNING: keep the secret key used in
production secret!
SECRET_KEY = 'django-insecure-
n6ox*09*k$t9w+&#s%efe6w+lcx!(^=hsbk&264)o=uxa3s)^j'

# SECURITY WARNING: don't run with debug turned on in
production!
DEBUG = True

ALLOWED_HOSTS = ['103.247.10.207',
'monitoringbendungan.online']

# Application definition

```

```

INSTALLED_APPS = [
    'django.contrib.admin',
    'django.contrib.auth',
    'django.contrib.contenttypes',
    'django.contrib.sessions',
    'django.contrib.messages',
    'django.contrib.staticfiles',
    'TA_app'
]

MIDDLEWARE = [
    'django.middleware.security.SecurityMiddleware',

    'django.contrib.sessions.middleware.SessionMiddleware',
    'django.middleware.common.CommonMiddleware',
    'django.middleware.csrf.CsrfViewMiddleware',

    'django.contrib.auth.middleware.AuthenticationMiddleware',

    'django.contrib.messages.middleware.MessageMiddleware',

    'django.middleware.clickjacking.XFrameOptionsMiddleware',
]

ROOT_URLCONF = 'tugas_akhir.urls'

TEMPLATES = [
    {
        'BACKEND':
        'django.template.backends.django.DjangoTemplates',
        'DIRS': [TEMPLATE_DIR],
        'APP_DIRS': True,
        'OPTIONS': {
            'context_processors': [

                'django.template.context_processors.debug',

                'django.template.context_processors.request',

                'django.contrib.auth.context_processors.auth',

                'django.contrib.messages.context_processors.messages',
            ],
        },
    },
]

```

```

]

WSGI_APPLICATION = 'tugas_akhir.wsgi.application'

# Database
#
https://docs.djangoproject.com/en/3.2/ref/settings/#databases

DATABASES = {
    'default': {
        'ENGINE': 'django.db.backends.mysql',
        'NAME': 'database_TA',
        'USER': 'xxxxx',
        'PASSWORD': 'xxxxxxxx',
        'HOST': 'localhost',
        'PORT': 3306,
    }
}

# Password validation
#
https://docs.djangoproject.com/en/3.2/ref/settings/#auth-password-validators

AUTH_PASSWORD_VALIDATORS = [
    {
        'NAME':
        'django.contrib.auth.password_validation.UserAttributeSimilarityValidator',
    },
    {
        'NAME':
        'django.contrib.auth.password_validation.MinimumLengthValidator',
    },
    {
        'NAME':
        'django.contrib.auth.password_validation.CommonPasswordValidator',
    },
    {
        'NAME':
        'django.contrib.auth.password_validation.NumericPasswordValidator',
    },
]

```

```
    },  
]  
  
# Internationalization  
# https://docs.djangoproject.com/en/3.2/topics/i18n/  
  
LANGUAGE_CODE = 'en-us'  
  
TIME_ZONE = 'UTC'  
  
USE_I18N = True  
  
USE_L10N = True  
  
USE_TZ = True  
  
# Static files (CSS, JavaScript, Images)  
# https://docs.djangoproject.com/en/3.2/howto/static-files/  
  
STATIC_URL = '/static/'  
STATICFILES_DIRS = [  
    STATIC_DIR,  
]  
# Default primary key field type  
#  
https://docs.djangoproject.com/en/3.2/ref/settings/#default-auto-field  
  
DEFAULT_AUTO_FIELD = 'django.db.models.BigAutoField'  
STATIC_ROOT =  
    '/monitoring_bendungan/site/public/static'
```

Lampiran 16. *Script program “urls.py” pada Django-Framework.*

```

"""tugas_akhir URL Configuration

The `urlpatterns` list routes URLs to views. For more
information please see:

https://docs.djangoproject.com/en/3.2/topics/http/urls/
Examples:
Function views
    1. Add an import:  from my_app import views
    2. Add a URL to urlpatterns:  path('', views.home,
name='home')
Class-based views
    1. Add an import:  from other_app.views import Home
    2. Add a URL to urlpatterns:  path('',
Home.as_view(), name='home')
Including another URLconf
    1. Import the include() function: from django.urls
import include, path
    2. Add a URL to urlpatterns:  path('blog/',
include('blog.urls'))
"""
from django.contrib import admin
from django.urls import path, include
from TA_app import views

urlpatterns = [
    path('admin/', admin.site.urls),
    path('', include('TA_app.urls')),
]

```


Lampiran 17. Script program “Dashboard.html” pada halaman *website*.

```

{% load static %}
<!DOCTYPE html>
<html lang="en" dir="ltr">
  <head>
    <meta charset="utf-8">
    <script src="https://cdn.plot.ly/plotly-
2.1.0.min.js"></script>
    <link
href="https://cdn.jsdelivr.net/npm/bootstrap@5.1.0/dist
/css/bootstrap.min.css" rel="stylesheet"
integrity="sha384-
KyZXEAg3QhqLMpG8r+8fhAXLRk2vvoC2f3B09zVXn8CA5QIVfZOJ3BC
sw2P0p/We" crossorigin="anonymous">
    <link rel="stylesheet"
href="https://use.fontawesome.com/releases/v5.8.2/css/a
ll.css">
    <link rel="stylesheet"
href="https://fonts.googleapis.com/css">
    <link rel="stylesheet" href="{%static
"speedometer.css" %}">
    <title> Monitoring Bendungan </title>
  </head>

  <body>
    <div class="container border border-secondary">
      <!-- NAVBAR -->
      <div class="row" style="background: #D6C6DF;
font-family: Lucida Sans; font-size: 20px">
        <nav class="navbar navbar-light">
          <div class="container-fluid">
            <a class="navbar-brand ms-4" href="#">
               </img>
              <span> <strong> Departemen Fisika,
Universitas Hasanuddin </strong> </span>
            </a>
          </div>
        </nav>
      </div>
      <!-- NAVBAR PILIHAN -->

```

```

    <div class= "row" style="background: #7C6A86; font-
family: open sans; font-size: 15px">
    <ul class="nav nav-tabs ps-5">
    <li class="nav-item">
    <a class="nav-link active" aria-current="page"
href="#"> Home </a>
    <li class="nav-item">
    <a class="nav-link text-light" aria-
current="page" href=" ../grafik_data/"> Grafik Data</a>
    </li>
    <li class="nav-item">
    <a class="nav-link text-light" aria-
current="page" href=" ../tabel_data/"> Tabel Data </a>
    </li>
    <li class="nav-item">
    <a class="nav-link text-light" aria-
current="page" href=" ../jenis_sensor/"> Jenis Sensor
</a>
    </li>
    </ul>
</div>
<!-- NAVBAR PILIHAN -->

<!-- ISI -->
<div class="row px-5" style="background: #f2f2f2">
    <!--baris pertama-->
    <div class="row py-3">
    <div class="col">
    <div class="row">
    <div class="card border-light" >
    <div class="card-body text-center"
style="text-align: justify; font-size: 45px; color:
#440066">
    <p> <strong> Selamat Datang! </strong>
</p>
    </div>
    </div>
    </div>
    <div class="row pt-3">
    <div class="card">
    <div class="card-body" style=" text-align:
justify">
    <h6 class="card-text">
    Laman ini menyajikan data <em> realtime
</em> pengukuran ketinggian air

```

dan curah hujan pada Bendungan
Kampili, Desa Bontoramba, Kecamatan Palangga, Kabupaten
Gowa.

Terima kasih telah berkunjung.
</h6>

</div>
</div>
</div>
</div>

```
<div class="col">
  <div class="card border-light">
    <div class="card-header" style="color:
#440066">
      <svg xmlns="http://www.w3.org/2000/svg"
width="16" height="16" fill="currentColor" class="bi
bi-bar-chart-line-fill" viewBox="0 0 16 16">
        <path d="M11 2a1 1 0 0 1 1-1h2a1 1 0 0 1
1 1v12h.5a.5.5 0 0 1 0 1H.5a.5.5 0 0 1 0-1H1v-3a1 1 0 0
1 1-1h2a1 1 0 0 1 1 1v3h1V7a1 1 0 0 1 1-1h2a1 1 0 0 1 1
1v7h1V2z"/>
      </svg>
      Pengukuran Realtime
    </div>
    <div class="card-body">
      <div class="wrapper">
        <div class="rang">
          <div class="rang-title">
            <input class="rang-number" id="show"
type="text" value="" disabled="disabled">
          </div>
          <svg class="meter">
            <circle class="meter-left" r="96"
cx="135" cy="142"> </circle>
            <circle class="meter-center" r="96"
cx="136" cy="142"></circle>
            <circle class="meter-right" r="96"
cx="138" cy="142"></circle>
            <polygon class="meter-clock"
points="129,145 137,90 145,145"></polygon>
            <circle class="meter-circle" r="10"
cx="137" cy="145"></circle>
            //input nilai
          </svg>
          <!-- <input class="rang-slider"
id="range" type="range" min="0" max="100" value= /> -->
```

```

        </div>
      </div>
    </div>
  </div>
</div>
<!--baris pertama-->

<!--baris kedua-->
<div class="row pt-2 pb-4">
  <div class="row row-cols-1 row-cols-md-3">
    <div class="col">
      <div class="card">
        <div class="card-body">
          <h5 class="card-title" style="text-align: center">
            <svg
xmlns="http://www.w3.org/2000/svg" width="16"
height="16" fill="currentColor" class="bi bi-calendar-week" viewBox="0 0 16 16">
              <path d="M11 6.5a.5.5 0 0 1 .5-.5h1a.5.5 0 0 1 .5.5v1a.5.5 0 0 1-.5.5h-1a.5.5 0 0 1-.5-.5v-1zm-3 0a.5.5 0 0 1 .5-.5h1a.5.5 0 0 1 .5.5v1a.5.5 0 0 1-.5.5h-1a.5.5 0 0 1-.5-.5v-1zm-5 3a.5.5 0 0 1 .5-.5h1a.5.5 0 0 1 .5.5v1a.5.5 0 0 1-.5.5h-1a.5.5 0 0 1-.5-.5v-1zm3 0a.5.5 0 0 1 .5-.5h1a.5.5 0 0 1 .5.5v1a.5.5 0 0 1-.5.5h-1a.5.5 0 0 1-.5-.5v-1zm3 0a.5.5 0 0 1 .5-.5h1a.5.5 0 0 1 .5.5v1a.5.5 0 0 1-.5.5h-1a.5.5 0 0 1-.5-.5v-1z"/>
              <path d="M3.5 0a.5.5 0 0 1 .5.5V1h8V.5a.5.5 0 0 1 1 0V1h1a2 2 0 0 1 2 2v11a2 2 0 0 1-2 2H2a2 2 0 0 1-2-2V3a2 2 0 0 1 2-2h1V.5a.5.5 0 0 1 .5-.5zM1 4v10a1 1 0 0 0 1 1h12a1 1 0 0 0 1-1V4H1z"/>
            </svg>
          </h5>
          <div class="card-text" style="font-family: monospace; text-align: center">
            <h6 id="date"> </h6>
            <h5 id="time"> </h5>
          </div>
        </div>
      </div>
    </div>
  </div>
</div>
<div class="col">
  <div class="card">
    <div class="card-body">

```

```

                <p class="card-title" style="text-align: center; color: #440066">
                    <svg
xmlns="http://www.w3.org/2000/svg" width="16"
height="16" fill="currentColor" class="bi bi-bar-chart-line-fill" viewBox="0 0 16 16">
                        <path d="M11 2a1 1 0 0 1 1-1h2a1 1 0 0 1 1 1v12h.5a.5.5 0 0 1 0 1H.5a.5.5 0 0 1 0-1H1v-3a1 1 0 0 1 1-1h2a1 1 0 0 1 1 1v3h1V7a1 1 0 0 1 1-1h2a1 1 0 0 1 1 1v7h1V2z"/>
                    </svg>
                    Ketinggian Air </p>
                    <h4 class="card-text" id="data1" style="text-align: center"> </h4>
                </div>
            </div>
        </div>

        <div class="col">
            <div class="card">
                <div class="card-body">
                    <p class="card-title" style="text-align: center; color: #440066">
                        <svg
xmlns="http://www.w3.org/2000/svg" width="16"
height="16" fill="currentColor" class="bi bi-bar-chart-line-fill" viewBox="0 0 16 16">
                            <path d="M11 2a1 1 0 0 1 1-1h2a1 1 0 0 1 1 1v12h.5a.5.5 0 0 1 0 1H.5a.5.5 0 0 1 0-1H1v-3a1 1 0 0 1 1-1h2a1 1 0 0 1 1 1v3h1V7a1 1 0 0 1 1-1h2a1 1 0 0 1 1 1v7h1V2z"/>
                        </svg>
                        Curah Hujan </p>
                        <h4 class="card-text" id="data2" style="text-align: center"> </h4>
                    </div>
                </div>
            </div>
        </div>
        </div>
        <!--baris kedua-->
    </div>
<!-- ISI -->

<!--CONTACT US-->
    <div class="row" style="background: #7C6A86; font-family: arial; font-size: 15px; color: #FFFFFF">

```

```

        <span class="mx-4"> <strong> Contact Us </strong>
|| evita.ardhiya99@gmail.com </span>
    </div>
    <!--CONTACT US-->

    <!--copyright-->
    <div class="row">
        <p class="text-center p-2"> &#169; 2021 | <em
style="font-family: home; font-size: 17px">Evita
Ardhiya Ramadhani <em> </p>
    </div>
    <!--copyright-->
</div>
    <!--script data ketinggian air dan curah hujan +
speedometer-->
    <script>
    if(typeof(EventSource) !== "undefined"){
        var source = new EventSource ("home/stream");
        source.onmessage = function(event){
            var getData = event.data;
            var data = getData.split(',');
            data[0] = 768 - data[0];
            //console.log(data[0]);
            //console.log(data[1]);
            document.getElementById ('data1').innerHTML =
data[0] + " cm";
            document.getElementById ('data2').innerHTML =
data[1] + " mm";
            var tanggal = data[2].split(".");

            //speedometer
            var rangeClock =
document.querySelector('.meter-clock');
            var derajat = (data[0]*(45/187)) - 94.81;
            rangeClock.style.transform = 'rotate(' +
derajat + 'deg)';

            //var data = data[0];
            if(data[0]<268){
                document.getElementById('show').value =
"Aman"
            }
            else if (data[0]<468&&data[0]>268){
                document.getElementById('show').value =
"Siaga"
            }
            else if (data[0]<668&&data[0]>468){

```

```

        document.getElementById('show').value =
        "Bahaya"
        }
    }

    }else{
        document.getElementById ('data1').innerHTML =
        "sorry your browser not support server-sent event";
        document.getElementById ('data2').innerHTML = "";
        document.getElementById ('data3').innerHTML = "";
    }
</script>
<!--script data ketinggian air dan curah hujan +
speedometer-->

<!--script tanggal+waktu-->
<script type="text/javascript">
    window.onload = setInterval(clock,1000);
    function clock()
    {
        var d = new Date();
        var date = d.getDate();
        var month = d.getMonth();
        var montharr =
["Januari", "Februari", "Maret", "April", "Mei", "Juni", "Jul
i", "Agustus", "September", "Oktober", "November", "Desember
"];
        month = montharr[month];
        var year = (d.getFullYear() + "");

        var day = d.getDay();
        var dayarr
=["Minggu, ", "Senin, ", "Selasa, ", "Rabu, ", "Kamis, ", "Jumat,
", "Sabtu, "];
        day = dayarr[day];

        var hour = ('0' + d.getHours()).slice(-2);
        var min = ('0' + d.getMinutes()).slice(-2);
        var sec = (('0' + d.getSeconds()).slice(-2) + '
WITA');
        document.getElementById("date").innerHTML=day +
" " + date + " " + month + " " + year;

document.getElementById("time").innerHTML=hour+":"+min+
":"+sec;
    }
</script>

```

```
        <!--script tanggal+waktu-->  
    </body>  
</html>
```


Lampiran 18. *Script* program “speedometer.css” pada halaman *website*.

```
.wrapper{
    width: 600px;
    margin: 0 auto;
}
.rang {
    text-align: center;
}
.rang-title {
    display: inline-block;
    width: 200px;
}
.rang-number-aman{
    width: 100%;
    margin-top: 40px;
    text-align: center;
    border-width: 0;
    font-size: 50px;
    font-weight: 900;
    background-color: #fff;
    color: #00ff00
}
.rang-number-siaga{
    width: 100%;
    margin-top: 40px;
    text-align: center;
    border-width: 0;
    font-size: 50px;
    font-weight: 900;
    background-color: #fff;
    color: #ffff00
}
.rang-number-bahaya{
    width: 100%;
    margin-top: 40px;
    text-align: center;
    border-width: 0;
    font-size: 50px;
    font-weight: 900;
    background-color: #fff;
    color: #ff0000
}
.meter {
    display: block;
    width: 273px;
    height: 155px;
```

```
        margin: 0 auto;
    }
    .meter-left {
        transform: skewX(-2deg) skewY(1deg);
        stroke-width: 58;
        stroke-dashoffset: 253;
        stroke-dasharray: 120 400;
        stroke: #00ff00;
        fill: none;
    }
    .meter-center {
        stroke-width: 56;
        stroke-dashoffset: 128;
        stroke-dasharray: 120 400;
        stroke: #ffff00;
        fill: none;
    }
    .meter-right {
        transform: skewX(2deg) skewY(1deg);
        stroke-width: 58;
        stroke-dashoffset: 5;
        stroke-dasharray: 120 400;
        stroke: #ff0000;
        fill: none;
    }
    .meter-clock {
        transform: rotate(-54deg);
        transform-origin: 137px 146px;
        fill: black;
    }
    .meter-circle {
        fill: black;
    }
}
```

Lampiran 19. *Script program “tabel_data.html” pada halaman website.*

```

<!DOCTYPE html>
{% load static %}
<html lang="en" dir="ltr">
  <head>
    <meta charset="utf-8">
    <script src="https://cdn.plot.ly/plot.ly-
2.1.0.min.js"> </script>
    <link
href="https://cdn.jsdelivr.net/npm/bootstrap@5.1.0/dist
/css/bootstrap.min.css" rel="stylesheet"
integrity="sha384-
KyZXEAg3QhqLMPG8r+8fhAXLRk2vvoC2f3B09zVXn8CA5QIVfZOJ3BC
sw2P0p/We" crossorigin="anonymous">
    <script
src="https://cdn.jsdelivr.net/npm/bootstrap@5.0.0-
beta2/dist/js/bootstrap.bundle.min.js"
integrity="sha384-
b5kHyXgcpbZJO/tY9U17kGkf1S0CWuKcCD3818YkeH8z8QjE0jE0GmW
1gYU5s9FOnJ0" crossorigin="anonymous"> </script>
    <link rel="stylesheet"
href="https://use.fontawesome.com/releases/v%.8.2/css/a
ll.css">
    <link rel="stylesheet"
href="https://fonts.goggleapis.com/css">
    <title> Monitoring Bendungan </title>
  </head>

  <body>
    <div class="container border border-secondary">
      <!-- NAVBAR -->
      <div class="row" style="background: #D6C6DF;
font-family: Lucida Sans; font-size: 20px">
        <nav class="navbar navbar-light">
          <div class="container-fluid">
            <a class="navbar-brand ms-4" href="#">
               </img>
              <span> <strong> Departemen Fisika,
Universitas Hasanuddin </strong> </span>
            </a>
          </div>
        </nav>

```

```

</div>
<!-- NAVBAR -->

<!-- NAVBAR PILIHAN -->
<div class= "row" style="background: #7C6A86; font-
family: open sans; font-size: 15px">
  <ul class="nav nav-tabs ps-5">
    <li class="nav-item">
      <a class="nav-link text-light" aria-
current="page" href=".."> Home </a>
    <li class="nav-item">
      <a class="nav-link text-light" aria-
current="page" href="../grafik_data/"> Grafik Data</a>
    </li>
    <li class="nav-item">
      <a class="nav-link active" aria-current="page"
href="#"> Tabel Data </a>
    </li>
    <li class="nav-item">
      <a class="nav-link text-light" aria-
current="page" href="../jenis_sensor/"> Jenis Sensor
</a>
    </li>
  </ul>
</div>
<!-- NAVBAR PILIHAN -->

<div class="row px-5" style="background: #f2f2f2">
<!--ISI-->
<!--baris pertama-->
<!--baris pertama-->

<!--baris kedua-->
<div class="row pt-4">
  <div class="col p-2">
    <div class="card text-dark mb-3" >
      <div class="card-body">
        <p class="card-text text-center"
style="font-size: 18px; color: #440066">
          <strong> Jangka waktu </strong>
        </p>
      </div>
    </div>
  </div>

  <div class="col p-2">
    <form method='get'>

```

```

        <div class="card text-dark bg-light mb-3">
            <div class="card-header" style="color:
#440066"> Tanggal Awal </div>
            <div class="card-body">
                <p class="card-text">
                    <input type="datetime-local" class="form-
control" id="1" name="awal" required>
                </p>
            </div>
        </div>
    </div>

    <div class="col p-2">
        <div class="card text-dark bg-light mb-3">
            <div class="card-header" style="color:
#440066"> Tanggal Akhir </div>
            <div class="card-body">
                <p class="card-text">
                    <input type="datetime-local" class="form-
control" id="2" name="akhir" required>
                </p>
            </div>
        </div>
    </div>

    <div class="col p-5">
        <div class="card">
            <button type="submit" class="btn btn-primary
align-center"> Submit </button>
        </div>
    </div>
</form>
<!--baris kedua-->

<!--baris ketiga-->
<div class="col p-3">
    <div class="card">
        <div class="card-header" style="color: #440066">
Tabel Data </div>
        <div class="card-body">
            <p class="card-text">
                <table class="table" style="font-family:
arial; font-size: 15px; text-align: center">
                    <thead class="table">
                        <th scope="col"> Tanggal </th>
                        <th scope="col"> Tinggi Air </th>
                        <th scope="col"> Curah Hujan </th>

```

```

        </thead>
        {% if datas != '' %}
        <tbody>
            {% for data in datas %}
            <tr>
                <td>{{data.tanggal_input}}</td>
                <td>{{data.ketinggian_air}}</td>
                <td>{{data.curah_hujan}}</td>
            </tr>
            {% endfor %}
        </tbody>
        {% endif %}
    </table>

    </div>
</div>
</div>
<!--baris ketiga-->

<!--copyright-->
<div class="row p-3">
    <p class="text-center mx-4"> &#169; 2021 | <em
style="font-family: home; font-size: 17 px"> Evita
Ardhiya Ramadhani </em> </p>
</div>
<!--copyright-->

</div>
</div>
</body>
</html>

```

Lampiran 20. *Script program “jenis_sensor.html” pada halaman website.*

```

<!DOCTYPE html>
{% load static %}
<html lang="en" dir="ltr">
  <head>
    <meta charset="utf-8">
    <script src="https://cdn.plot.ly/plotly-
2.1.0.min.js"> </script>
    <link
href="https://cdn.jsdelivr.net/npm/bootstrap@5.1.0/dist
/css/bootstrap.min.css" rel="stylesheet"
integrity="sha384-
KyZXEAg3QhqLMpG8r+8fhAXLRk2vvoC2f3B09zVXn8CA5QIVfZ0J3BC
sw2P0p/We" crossorigin="anonymous">
    <script
src="https://cdn.jsdelivr.net/npm/bootstrap@5.0.0-
beta2/dist/js/bootstrap.bundle.min.js"
integrity="sha384-
b5kHyXgcpbZJO/tY9U17kGkf1S0WuKcCD38l8YkeH8z8QjE0GmW1gYU
5S9FOnJ0" crossorigin="anonymous"> </script>
    <link rel="stylesheet"
href="https://use.fontawesome.com/releases/v5.8.2/css/a
ll.css">
    <link rel="stylesheet"
href="https://fonts.googleapis.com/css">
    <title> Monitoring Bendungan </title>
  </head>

  <body>
    <div class="container border border-secondary">
      <!-- NAVBAR -->
      <div class="row" style="background: #D6C6DF;
font-family: Lucida Sans; font-size: 20px">
        <nav class="navbar navbar-light">
          <div class="container-fluid">
            <a class="navbar-brand ms-4" href="#">
               </img>
              <span> <strong> Departemen Fisika,
Universitas Hasanuddin </strong> </span>
            </a>
          </div>
        </nav>

```

```

</div>
<!-- NAVBAR -->

<!-- NAVBAR PILIHAN -->
<div class= "row" style="background: #7C6A86; font-
family: open sans; font-size: 15px">
  <ul class="nav nav-tabs ps-5">
    <li class="nav-item">
      <a class="nav-link text-light" aria-
current="page" href=".."> Home </a>
    <li class="nav-item">
      <a class="nav-link text-light" aria-
current="page" href="../grafik_data/"> Grafik Data</a>
    </li>
    <li class="nav-item">
      <a class="nav-link text-light" aria-
current="page" href="../tabel_data/"> Tabel Data </a>
    </li>
    <li class="nav-item">
      <a class="nav-link active" aria-current="page"
href="#"> Jenis Sensor </a>
    </li>
  </ul>
</div>
<!-- NAVBAR PILIHAN -->

<div class="row px-5" style="background: #f2f2f2">
  <!-- ISI-->
  <!-- Baris pertama-->
  <div class="row pt-4" style="color: #440066; text-
align:center; font-family: monospace;; font-size:
40px">
    <p>
      <svg xmlns="http://www.w3.org/2000/svg"
width="30" height="30" fill="currentColor" class="bi
bi-tools" viewBox="0 0 16 16">
        <path d="M1 0 0 112.2 3.081a1 1 0 0 0
.815.419h.07a1 1 0 0 1 .708.293l2.675 2.675-2.617
2.654A3.003 3.003 0 0 0 0 13a3 3 0 1 0 5.878-
.851l2.654-2.617.968.968-.305.914a1 1 0 0 0 .242
1.023l3.356 3.356a1 1 0 0 0 1.414 0l1.586-1.586a1 1 0 0
0 0-1.414l-3.356-3.356a1 1 0 0 0-1.023-.242L10.5 9.51-
.96-.96 2.68-2.643A3.005 3.005 0 0 0 16 3c0-.269-.035-
.53-.102-.777l-2.14 2.14l12 4l-.364-1.757L13.777.102a3
3 0 0 0-3.675 3.68L7.462 6.46 4.793 3.793a1 1 0 0 1-
.293-.707v-.071a1 1 0 0 0-.419-.814L1 0zm9.646
10.646a.5.5 0 0 1 .708 0l3 3a.5.5 0 0 1-.708.708l-3-

```



```

3a.5.5 0 0 1 0-.708zM3
111.471.242.529.026.287.445.445.287.026.529L5 131-
.242.471-.026.529-.445.287-.287.445-.529.026L3 151-
.471-.242L2 14.7321-.287-.445L1.268 141-.026-.529L1
131.242-.471.026-.529.445-.287.287-.445.529-.026L3
11z"/>
      </svg>
      <strong> Sensor yang digunakan untuk
pengukuran </strong>
    </p>
  </div>
<!-- Baris pertama-->

<!-- Baris kedua-->
<div class="row row-cols-1 row-cols-md-2">
  <div class="col pb-2 px-2">
    <div class="card">
      <div class="card-header" style="color:
#440066"> Ketinggian Air </div>
      <div style="text-align: center">
         </img>
      </div>
      <div class="card-body">
        <h5 class="card-title"> Sensor Ultrasonik
JSN-SR04T </h5>
        <p class="card-text" style="text-align:
justify">
          Sensor ultrasonik adalah alat elektronik
yang dapat mengubah energi listrik
          menjadi energi mekanik berupa gelombang
suara ultrasonik.
          Sensor ultrasonik JSN-SR04T memiliki
panjang kabel 1 m,
          memiliki akurasi 1 cm, jangkauan 20-600
cm dan frekuensi yang digunakan 40 KHz. <br>
          Prinsip kerja sensor ini yaitu, saat
transmitter mengirimkan
          gelombang ultrasonik, kemudian gelombang
tersebut mengenai suatu objek maka
          gelombang akan dipantulkan kembali
sehingga pantulan akan diterima oleh receiver
          dan memperoleh hasil pengukuran.
        </p>
      </div>
    </div>
  </div>

```

```

    </div>
  </div>

  <div class="col pb-2 px-2">
    <div class="card">
      <div class="card-header" style="color:
#440066"> Curah Hujan </div>
      <div style="text-align: center">
         </img>
      </div>
      <div class="card-body">
        <h5 class="card-title"> Sensor Curah Hujan
<em> Tipping Bucket </em> </h5>
        <p class="card-text" style="text-align:
justify">
          Sensor curah hujan tipping bucket
berkerja dengan cara menimbang jumlah air
          hujan yang tertampung pada bucket
kemudian disalurkan pada skala ukur.
          Prinsip kerja sensor ini adalah ketika
hujan turun, air akan masuk melalui
          corong yang berbentuk kerucut terbalik,
air hujan kemudian ditampung oleh
          bucket yang berayun. Terdapat dua buah
bucket yang dibentuk seperti jungkat-jungkit
          yang berayun tiap kali satu sisi bucket
terisi penuh dan bucket yang lain akan
          naik untuk menampung tetesan air hujan.
Setiap jatuhnya bucket maka akan mengaktifkan
          reed switch magnetik (berfungsi sebagai
saklar). Setelah berjungkit dan
          menggerakkan saklar, maka akan direkam
secara elektronik dan didapatkan hasil keluaran.
        </p>
      </div>
    </div>
  </div>
</div>
<!-- Baris kedua-->
<!-- ISI -->

<!--copyright-->
<div class="row p-3">

```

```
        <p class="text-center mx-4"> &#169; 2021 | <em
style="font-family: home; font-size: 17 px"> Evita
Ardhiya Ramadhani </em> </p>
    </div>
    <!--copyright-->
</div>
</div>
</body>
</html>
```